Behavioural Challenges in Pediatric Patients During Eye Examination

Mohd Zaki Awg Isa[1,2], Mohammad Mizanur Rahman[1,2]

[1]*MSU Center of Excellence for Vision and Eyecare, Management & Science University, Malaysia*
[2] *Department of Optometry and Vision Science, Faculty of Life Sciences. Management & Science University, Malaysia*
mohd_mizanur@msu.edu.my

Abstract	Article Info
Eyesight problems among children are a serious matter. In many cases, eye problems can be treated if early detection and intervention are administered carefully. However, dealing with uncooperative children during eye examinations is challenging. This study aimed to enlighten the factors influencing a child's uncooperative behaviours during eye examination in optometry practices. Children aged 4 to 12 years old were selected, and a modified fitting Behavioural Measurement Scale (BMS) was used to measure the child's uncooperative behaviour during eye examination. The respondents comprised 55 children, 110 parents, 4 optometrists, and 6 non-clinical staff members who were involved in this study. This study identified four key variables that influence uncooperative behaviours among children. Child's family background, optometry practice environment, optometrist's clinical skills, and optometrist's communication skills were noted to have a significant effect on the child's uncooperative behaviour and explain 97.3% of the model variance. This study shows that emphasis on behaviour management is vital as a crucial aspect during eye examinations. The child's cooperation during eye examination in an optometry practice is essential to prevent misdiagnosis, mismanagement, and inaccurate results that could lead to poor clinical service delivery and outcomes.	

INTRODUCTION

Over the years, there has been a noticeable increase in visual impairment among children worldwide. According to a WHO-derived estimate from 2023, approximately 19 million children globally are visually impaired, 1.4 million are blind, and 17.5 million have low vision (Saif Alrasheed, 2023). This aligns with earlier figures by (Pascual et al. 2014), who estimated that out of the world's 285 million visually impaired individuals, 19 million were children (en.wikipedia.org). A recent study in Malaysia (2016) found 12.5% of children aged 4 to 6 had an undiagnosed visual impairment. The percentage of children with visual impairment in Malaysia was higher than in its neighbouring countries (nst.com.my). More recently, a 2025 study found that 22.3% of children in Malaysia had visual impairment, with more than half of the cases consisting of treatable refractive errors (sunwaymedicalvelocity.com.my). This has helped highlight the rampant number of undiagnosed visual complications that children are experiencing around the world, but more importantly it shows that correctable refractive errors are a major global issue. According to the World Health Organisation (WHO) in early 2026, uncorrected refractive errors (myopia, hyperopia & astigmatism) are the leading cause of vision impairment in children, with a substantial number of cases of mild visual loss globally (WHO, 2026) being associated with uncorrected refractive errors (Saif Alrasheed, 2023). Thus, the uncooperative behaviours in children have been highlighted in various previous studies, especially in the area of optometry research. According to past literature, uncooperative behaviours among children is classified as a result of certain recurring factors. These factors are the state or condition of a child's family background, the clinical practice environment, and the practitioner's behavior based on the practitioner's communication and clinical skills in the presence of a child patient during an eye examination (Stein et al., 2016). Therefore, to address this issue, this study has been carried out to add to the body of knowledge and bridge the gap within the optometry field.

METHODOLOGY

Study Design
The study adopted a quantitative methodology with the aid of a structured, closed-ended questionnaire based on the Frankl scale (BMS), to measure children's uncooperative behaviors during eye examinations. The research constituted a cross-sectional study, collecting data at one point in time. The degree of acceptance or rejection of the formulated hypotheses was statistically analyzed. To facilitate the targeting of children, a random probability sampling method was implemented to achieve the fair selection of all children aged four to twelve within the study group (Seema, 2018). Data collection proceeded from February to May 2019.

Sampling Method
Seema (2018) determined that by using random probability sampling all the children in the specified age range were equally as likely as the other children to be a participant in the study sample. Children aged four to twelve, their parents as well as optometrists and clinical staff from two private optometry practices in Penang, were the focus of the analysis. Overall, 55 participants included the children, 110 parents, 4 optometrists, and 8 clinical staff.

Data Collection
Children aged four to twelve who showed up at the optometry practices were also identified in the study. Observation started with the admission of each child into the clinic, in which they were observed on the basis of their reactions and responses to the environment. All patients received standard assessment measures, that described the clinic atmosphere and behaviours of the optometrists in this study. Classifications of behaviors are described in Table 01. Cronbach's alpha was calculated for each variable (measured against a minimum threshold of 0.70 in Table 02) in order to validate the quality of the developed BMS. All observations and responses were systematically documented. Finally, 110 parents and 55 children completed questionnaires for complementary information relevant to the research aims.

Table 01: Domains of cooperative and uncooperative behaviours

UNCOOPERATIVE BEHAVIOR/ POTENTIALLY COOPERATIVE BEHAVIOR	COOPERATIVE BEHAVIOR
1. Anxiety • Dread/fear • Crying	**1. Calmness** • Relaxed • Warm up (Getting comfortable) • Comfortable
2. Non-communicative • Quiet • Shy	**2. Communicative** • Can talk (Willing to talk) • Agrees with optometrist
3. Showing no interest • Bored (During long eye exam procedures)	**3. Showing interest** • Looking forward to next eye exam procedure • Sense of wonder • Curious • Enjoys • Laughing
4. Undisciplined • Unpredictable • Screaming • Impatient • Limited attention • Too active • Easily distracted	**4. Discipline** • Perform(as patient in eye exam) correctly • Trying to learn eye chart(showing effort) • Giving attention • Allows for objective testing

Table 02 Testing of the Questionnaire for Reliability

Variable	Cronbach's alpha	Items
Child Family Background	0.836	4
Optometry Practice Environment	0.765	2
Optometrist's Communication Skills	0.802	3
Optometrist's Clinical Skills	0.793	3
Child's Uncooperative Behaviour	0.738	6

Data Analysis

The Statistical Package for the Social Sciences (SPSS) programme was used on the collected data to perform all analyses (version 21). Regression analysis was performed to test the relationships between the independent variables: family background, clinical environment, and the health care provider's communication & clinical skills, and the uncooperative behaviours of children.

Results

This section presents the outcomes of the regression analysis conducted to test the study's hypotheses. Standard regression methods were used, but before reviewing the results, it was necessary to verify that the data met the assumptions required for multiple regression analysis. Assumptions include: linearity, homoscedasticity, multicollinearity, and no outliers (influence).

Normality: These two histograms show that the majority of observations are concentrated at the center, with the shape of the graph resembling a bell. Additionally, the normal probability (P-P plot) demonstrates that most of the residual points fall near the diagonal line, thus indicating that the variable is normally distributed.

Heteroscedasticity: Based on the Breusch-Pagan test, the p-value identified is insignificant. Therefore, no heteroscedasticity is identified for Child's Uncooperative Behaviour.

Multicollinearity: All the VIF values are less than the limit of 10, and all the tolerance values are greater than 0.1. This proves that there is no multicollinearity present in the data, as seen in Table 03.

Table 03 VIF and Tolerance values for Child's Uncooperative Behaviour

Independent Variables	VIF	Tolerance
Child Family Background	1.007	0.993
Optometry Practice Environment	1.528	0.655
Optometrist's Clinical Skills	1.639	0.610
Optometrist's Communication Skills	1.923	0.520

Outliers: Examination of the residual plots depicts that no cases had residual values beyond the limit of 3.3 or less than -3.3.

According to Table 04, the results of the regression analysis of child family background, the optometry practice environment, optometrist clinical skills, and optometrist communication skills were obtained with respect to uncooperative behaviour in children. As a whole, these predictors explained 97.3% of the variance in children's uncooperative behavior with high statistical significance (F = 441.68, p < 0.01). Each of these predictors had a substantial impact on uncooperative behavior: child family background (β = -0.06, p < 0.01), optometry practice environment (β = 0.31, p < 0.01), optometrist clinical skills (β = 0.08, p < 0.05), and optometrist communication skills (β = 0.73, p < 0.01).

Table 4: Factor Analysis of Variables

Variable	Items	Component	Eigenvalue	Total Variance Explained (%)	Kaiser-Meyer-Olkin (KMO)	Bartlett's Test of Spherecity
Child's Family Background	PRSQ	0.889	2.840	70.996	0.723	116.908, p<0.01
	PS	0.834				
	PES	0.811				
	PE	0.834				
Optometry Practice Environment	NCSM	0.913	1.665	83.272	0.690	61.703, p<0.01
	ACFS	0.913				
Optometrist's Communication Skills	NVL	0.941	2.820	94.017	0.718	267.838, p<0.01
	IUCL	0.986				
	SE	0.982				
Optometrist's Clinical Skills	CS	0.694	2.045	68.169	0.627	49.968, p<0.01
	OE	0.885				
	OCPD	0.883				
Child's Uncooperative Behavior	Coop5	0.887	4.000	66.674	0.799	241.794, p<0.01
	Coop6	0.617				
	Coop8	0.802				

Coop9	0.896
Coop10	0.932
Coop12	0.721

Table 5: Reliability of variables under study

Variable	Number of items	Number of items deleted after Reliability Analysis	Cronbach's alpha
Child Family Background	4	-	0.836
Optometry Practice Environment	2	-	0.765
Optometrist's Clinical Skills	3	-	0.793
Optometrist's Communication Skills	3	-	0.802
Child's Uncooperative Behaviour	6	-	0.738

Table 6: Regression analysis of tested variables

	B	B	t-value	Sig.	R	R²	F-value	F-sig
Constant	0.812		9.245	0.000	0.986	0.973	441.68	0.000
1. Child Family Background	-0.079	-0.064	-2.703	0.009				
2. Optometry Practice Environment	0.316	0.307	10.598	0.000				
3. Optometrist's Clinical Skills	0.092	0.077	2.579	0.013				
4. Optometrist's Communication Skills	0.735	0.729	22.415	0.000				

Significant levels: $*p<0.05$, $**p<0.01$

DISCUSSION

The results of the study illustrate that a child's family background, the context of the optometry work, as well as the clinical and communication skills of the optometrist, are influencing to explain uncooperative behavior during eye examinations. The reason is that behavior management strategies are crucial for the training of every optometrist, whether they have a specialization in pediatric services. Moreover, a university's curricula must include extensive modules to deal with pediatric patients and to encourage patients to work together in the case of clinical assessment. This will help make sure that new graduates can be used in the examination setting, providing patients of all ages with high-quality eye care, and supporting the needs of children.

Ongoing training and training should be done on optometrist engagement with pediatric patients and collaboration, with a view towards diagnosis/treatment and treatment compliance at least. It is also essential to convey the message about the early detection of sight problems and the need for timely intervention to diverse socio-economic group parents. Educational initiatives in pre-schools and schools, such as informational talks or workshops, may improve these outcomes by giving parents information about eye and vision tests and other eye problems.

CONCLUSION

 In this research, we emphasize the importance of teaching children good eye care procedures and the benefits that these can have to help them manage their eyes. It also shows how educational initiatives in preschool and school, such as informational talks or workshops, can guide parents as they decide whether they'll give and

receive repeated procedures, thus promoting better life outcomes for children. The new work contributes to this literature by establishing a Behavior Management Scale (BMS) to help optometrists assess and approach pediatric patient behavior in the clinical environment and to provide a sense of ease to young patients. An optometrist must take innovative and holistic views to minimise their own communication skills and clinical acumen, the family background of the child, and how the practice can be improved. Future studies may also delve into psychological factors and developmental aspects that may influence the behavior of children during eye care visit giving further insight and other methods of handling such challenges.

ETHICAL CONSIDERATION

Ethics approval for this study was obtained from the Postgraduate School in Management and Science University, Shah Alam. Consent was given to conduct the assessment of the uncooperative behaviours during an eye examination of the child during an eye examination at two private optometry practices in Penang with the code MSU-RMC-02/FR01/08/L2/057. Parents of the subjects in this study who had children involved in this study provided written informed consent before the undertaking of the assessment.

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